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ABSTRACT

Speedback is a continuous audience response technology system that was used to test concepts and variable relationships that had been derived earlier from large-sample, survey research methodology. Continuous audience response technologies used computer hardware and customized software to collect subjects' reactions to stimuli, usually videotaped message. Previous researchers have criticized and praised small and large scale research. Those controversies are highlighted, continuous audience response technologies are described, and an alternative research method is proposed. The alternative, continuous audience response technology combined with survey methods, provided advantages inherent in each while overcoming limitations of either approach used independently. As an illustration, the report outlines a combined methods application in an investigation of audience response to several commercials supported by the Independent Insurance Agents of America. Several figures describing results of the research are included. (Author/DB)

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Continuous Audience Response Technology and Survey Methods: New Research Methods and an Application

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Continuous Audience Response Technology and Survey Methods: New Research Methods and an Application

This article described SpeedBack(sm), a continuous audience response technology system, that was used to test concepts and variable relationships that had been derived earlier from large-sample, survey research methodology. Continuous audience response technologies use computer hardware and customized software to collect subjects' reactions to stimuli, usually videotaped messages.

Previous researchers have criticized and praised small and large sample research. This article highlighted those controversies, described continuous audience response technologies, and proposed an alternative research method. The alternative, continuous audience response technology combined with survey methods, provided advantages inherent in each while overcoming limitations of either approach used independently. As an illustration, the authors reported a combined methods application in an investigation supported by the Independent Insurance Agents of America.

Continuous Audience Response Technology and Survey Methods: New Research Methods and an Application

Differing perspectives have been used as researchers attempted to minimize the total error of measurement when explaining relationships among variables. Criticisms of research methodologies are analogous to those expressed in the 1950's when George Gallup, a prominent survey methodologist, argued for large samples while Ernest Dicther, a motivation scholar, argued in favor of small clinical studies that probed for depth. Critics of methodologies that used small sample sizes lamented over the generalizability of results to other groups and populations; advocates of small "n"-sizes (particularly in focus groups) have cited advantages with in-depth analyses of qualitative data. Critics of survey methods have articulated concerns about the "superficiality and limited nature" of questioning techniques and restrictions in describing causal relationships; advocates have highlighted generalizability of variable relationships as a precondition to experimentation.

In response to these controversies, the authors sought to gain advantages of combining small and large sample methodologies (continuous audience response technology and survey methods) while minimizing the disadvantages of each. Consequently, the purpose of this monograph was four-fold: First, to briefly highlight some issues associated with research method selection; second, to describe continuous audience response technologies (CART); third, to present

results a from field research project that used combined survey research and CART methodologies; fourth, to provide conclusions and observations for combining survey and CART methods.

Issues Associated with Research Method Selection

Research methods books in the social sciences have described designs and tools used by scientists to explain relationships among variables. Hypothesis testing has been done with a variety of techniques: Controlled experiments, survey research, case studies, content analysis, secondary analysis of existing data, and historical/comparative analysis (Babbie, 1988). Each of these methods are used to measure some expression of behavior and, consequently, must confront the problems in measurement technique reliability and validity (Nunnally, 1978). The net result has been the use of one technique to answer a particular research question, while a different technique might be used to answer another type of research question. To date, however, few researchers have offered recommendations for combining methods or reported research that used combined methods in order to capitalize on advantageous measurement techniques inherent in each method, or decrease potential problems inherent in each method.

Methodological Problems

Methodological strategies and techniques are designed to minimize the total error of measurement while providing a

means to discover and describe relationships among variables. Yet, all methods fall short in some respects.

Experimental Methods

Experimental research, with hypothesized variable relationships, require several replications before hypotheses are confirmed. In addition, experiments are often contaminated by such influences as experimenter demands and bias, generalizability, and the ability to control and isolate independent variables. Consequently, experimental designs are often difficult to implement in a field environment. As a result, much experimentation is done in a laboratory setting, often restricting generalizability to more realistic settings.

Ex Post Facto Methods

Ex post facto methods, found in "traditional" survey research, possesses measurement problems that can be more significant than those in experimental methods (Bradburn and Sudman, 1988). Typically, survey methods aim at reducing "total survey error" (Converse & Traugott, 1986), which is the sum of all potential sources of error that contribute to a survey's ability to mirror reality. For example, total error in surveys can consist of a variety of factors: Sampling error, unequal or unknown non-zero probability of inclusion in the sample for all members of population, non-response coding, interviewer bias, questionnaire bias, contextual effects, and data coding and analysis. Even

structured questions that are well-constructed and tested may be limited in providing depth in research information (Sudman & Bradburn, 1982). Finally, the error typically reported in scientific surveys as tolerated sampling error (e.g., + or - 4%) is but one (and not necessarily the largest) of several sources of error that can occur in survey methods.

Control of Independent Variable & Time

An important distinction between experimental and ex post facto designs is a function of experimenter control of the independent variable across time (Campbell & Cook, 1979). In a true experimental design the researcher manipulates (i.e., possesses physical control) an independent variable and measures degree of change in a dependent variable. Other research methods are considered to be ex post facto or quasi-experimental (Bailey, 1989; Kerlinger, 1973).

In ex post facto research, the experimenter has not or cannot manipulate the independent variable, nor have subjects been randomly assigned to treatment groups. Definitionally, then, independent and dependent variable changes have already occurred in time (Cook & Campbell, 1979; Keppel, 1982). Thus, confirming causal relationships are methodologically problematic in ex post facto research.

Methodology selection problems mirror general problems in the social sciences. Essentially, social science research questions infrequently lend themselves to experimental designs. As result, social science researchers are

constantly searching for new designs and technologies that will assist in answering their research questions. When combined, continuous audience response technology and survey methods provided an opportunity to test a new methodology.

Continuous Audience Response Technologies

Continuous audience response technology, used primarily in focus group settings, enables subjects to voluntarily respond to continuous stimuli by turning a dial on a hand-held device that triggers a recording of response options (selected by the subject) on computer hardware and software. Continuous stimuli is frequently in the form of audio and video messages and images (e.g., commercials, speeches, voice overlays on visual images, motion pictures, television programs, etc.). The more sophisticated CART systems contain an alphanumeric keypad, used most often for responding to open and closed questions. Subject responses are recorded as often as every 1/5 second, providing a continuous plot, in real time, to message and image variations in the stimuli. These responses are fed into a microcomputer with customized software that analyzes and outputs subject responses.

CART System Output

System output options and precision levels are a function of the hardware and software sophistication levels. For example, more advanced systems such as SpeedBack(sm) provide a combination of continuous curves, response category

bar graphs, significance of difference plots, and options for numerical output (e.g., frequency, means, standard deviations, etc.) by individual or crosstabulated demographic and psychographic categories. These outputs are immediately superimposed over the video/audio tape (stimulus) for a visual playback to subjects. During the playback session, in-depth probing is used to "debrief" focus group members and determine why they responded as they did to the stimulus. A few systems offer concurrent "hardcopy" printouts and graphics of descriptive statistics representing subjects' continuous responses.

The "high end" CART systems allow for continuous measurement and display of aggregate (all subjects) and demographic/psychographic (male/female, high/low dogmatic, liberal/moderate/conservative, etc.) subgroup responses. This technology provides instant feedback for individual subjects and grouped subjects. Thus, reactions are replayed while the group moderator probes to determine why individuals and subgroups responded to the stimulus as they did.

CART Systems like SpeedBack(sm) use individually, hand-held microcomputers that allow for a smooth, continuous "dial" response and also contain a two-line, LCD, personal viewing screen so subjects can privately confirm their responses (input) with visual feedback in numbers and words. The response dial can be employed with any scale descriptors (e.g., very favorable, moderately favorable, somewhat favorable, neutral, somewhat unfavorable, moderately

unfavorable, very unfavorable; believable/unbelievable; pleasant/unpleasant, etc.). The metric index used for quantifying adjective descriptors can also varying, with 1 to 100 being frequently used with SpeedBack(sm). Other systems may be limited to a metric of 1 to 5 or 7. The alphanumeric keypad is used for precise responses to demographic and psychographic questions; it also provides for open-ended responses. For example, open-ended questions are often used in "upstream" concept creation and testing before issues and messages are presented to the public (Hughes, 1990).

CART Session Format

A typical session occurs in a focus group facility or hotel meeting room. Technological advances in audio/video and computer hardware has allowed "parachuting" of a CART system into virtually any location. In addition, communications networks and facilities, such as the U.S. Sprint Room System, allows for groups at several locations to simultaneously participate in a CART session. Typically, subjects will sit around at table or in a "theatre"-type configuration, depending on the size of the group. The session is directed by a moderator (Krueger, 1988).

Subject Training & Stimulus Presentation

Subjects are given ten minutes training on their response tasks. Then, demographic/psychographic questions that have been entered a'prioi into the computer are sent to the subjects' television monitor. Subjects' respond to the

questions with their hand-held computer keyboard. Subject responses provide a means for categorizing subgroups (male/female, political affiliation, age, etc.) and become a part of the overlay tape that is created when "dialed" reactions to the stimulus are collected. Collectively, these responses become the vehicle for in-depth probing during the playback session.

Typically, the stimulus tape has a "warm up" and a "benchmark" segment used to familiarize and train subjects in the use of the technology. Once training is completed, the actual stimulus tape, containing the message/image segments (i.e., variables of interest), is presented to the group.

Focus Group Probing

Subjects are presented a videotape of their session and are asked to react to the ways they responded to the stimulus (dependent variable) concepts and provide reasons for their responses. This in-depth probing session is recorded by some CART systems. For example, SpeedBack(sm) technology can instantly provide edited combinations of key overlays and camera views of the moderator and group discussion.

Common post-stimulus questions are "Which speech did you like the best . . . why; may I ask the women why they, as a group, did not like this section of the commercial?" After debriefing is completed, the discussion tape (containing the stimulus material with superimposed subject responses and moderator/group interaction) is immediately available for analysis. Subjects' explanations for their reactions, in

their own words, are an important in the portion of this data gathering and analysis process. The debriefing session videotape is necessary for qualitative, content analytic research procedures employed in this type of research.

Combined CART and Survey Methods: An Application

As indicated at the beginning of this monograph, preferences for in-depth vs. generalizable information often predisposes the researcher to opt for survey or small group methodologies. To avoid constraints imposed by an either/or approach, the authors selected a research orientation that would provide advantages of each perspective and minimize limitations incurred when adopting one perspective to the exclusion of the other.

Rationale

Survey and small sample research methods provide "different" justifications for research conclusions. Quantitative survey research typically provides greater generalizability confidence because sampling techniques are based on probability modeling, providing statistical inferences and the ability to identify significant group characteristics (With and Vasu, 1987; Hurwitz and Peffley, 1987; Vasu 1979). Conversely, the continuous measurement response technology provides qualitative "depth" that is typically unavailable in survey research. In addition, the continuous measurement of subject responses and the "video

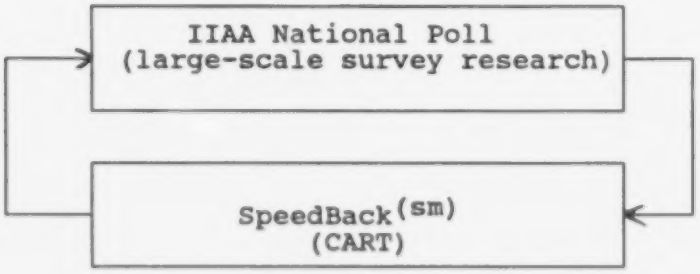
playback" probing offers a reliability and validity dimension absent, by necessity, in large scale survey research. However, CART results often have limited generalizability because focus group samples are small and not selected according to probability theory and the dictates of formal sampling. As a consequence, inference problems exist.

When CART and large-scale survey methods are combined, many methodological limitations are overcome. For example, an important application for continuous audience response technology is scientific confirmation; CART is well-suited for model building. Thus, CART is an enhancement, not a substitute, for other methodologies.

Combined methods resulted in a research strategy that has been employed by the Independent Insurance Agents of America. Figure 1 is a representation of the combined method research strategy.

Figure 1

COMBINED STRATEGIES
(Using SpeedBack(sm) and National Poll Data)



Combined methods provided the advantages not gained when either method is used alone:

1. Greater "breadth" reflected in the random sampling designs afforded by a large scale telephone survey.
2. Greater "depth" provided by the focus group format.

The IIAA national poll, based on a review of the literature and the expert input of insurance specialists, was used to develop statistical models of respondent behaviors related to insurance issues. Since these models, by necessity, were developed with conceptually-based, structured questions responses from a national sample, there was no opportunity to probe into complexities and interrelationships among the issues. Consequently, the relevance of nationally generated models to specific demographic subgroups was questionable. The SpeedBack(sm) technique provided a means for testing hypotheses derived from our national model, i.e., large-scale survey research. Essentially, insurance-related issues of significance to focus groups were used to generate dependent variable concepts. These concepts (issues) were used within CART technology and submitted to demographically selected focus groups.

Combined Methods: An Application

The Independent Insurance Agents of America asked the authors to conduct a post hoc assessment of voter reactions to television commercials and talk show vignettes in the state of California. The overall scope of that research project is beyond the limitations of this monograph, however,

important elements highlighting the uses of combined methods are presented to illustrate the power of continuous audience research technology as a way to expand available social science methodologies.

Initially, national poll information was analyzed for applicability to CART systems. Then, the authors investigated conditions associated with California insurance consumers, voters, and Proposition 103. These activities provided grounds for articulating research objectives, design, and procedures for data analysis.

National Opinion Poll

For the past three years, two of the authors have directed the Annual National Public Opinion Poll sponsored by the Independent Insurance Agents of America (IIAA) (Long and Vasu, 1988). IIAA's national survey research project gathers information telephonically from a national sample interviewed in the fall or winter. IIAA's poll provides consumer/voter databases used in developing communication, marketing, and public relations strategies and programs for the insurance industry. The results of the poll are presented at the industry's Insurance Communications Summit, the major national meeting of insurance industry personnel specializing in communications.

The questionnaires used in the annual poll were designed to provide several data sets: Profiles of current attitudes toward a variety of social, political, and economic issues facing the United State and the insurance industry;

assessments of insurance industry image; media and information consumption needs and habits for various demographic and psychographic groups; credibility levels of various professions and occupations; perceptions of profit in various occupations; etc.

Results from three years of national polling had resulted repeated "hypothesis" confirmations. This provided justification for developing a conceptual framework that described and predicted the American public perceived the issues and actors relevant to insurance-related policy questions in the United States. In addition, the database contained profiles of California voters to the extent that they were reflected in the national sample.

California Insurance Issues and Proposition 103

In the aftermath of Proposition 103 voting in California, the authors were asked by the IIAA to conduct a series of focus group studies with continuous attitudinal measurement technology. The project, in conjunction with the previously conducted polls was used to assist in strategic planning IIAA and the insurance industry.

In order to define consumer response patterns and reasons for those responses, particularly with respect to insurance issues in California, stimulus material used with the SpeedBack(sm) CART system included a prominent industry commercial and several televised "talk show" and news vignettes about insurance issues. All materials centered

around California's infamous "Insurance Initiative Campaign of 1988". SpeedBack(sm) hardware and software was configured to test applicability of models developed from national poll results among the focus groups.

The Insurance Initiative Campaign was a multimedia campaign designed to persuade voters to oppose various ballot initiatives, including Proposition 103, and to support Proposition 104 (called No Fault). Proposition 103 was the lone initiative passed by California voters in the November 1988 elections. It contained provisions to cut insurance rates by 20%, and imposed tough, new regulations on the insurance industry. In addition, Proposition 103 contained other provisions currently working there way though the Court system. The other initiatives, Propositions 100 (Ican), 101 (Polanco), 104 (No Fault), and 106 (Fees), were supported or opposed by various economic and professional interests.

Proposition 103 was characterized as the consumers initiative. Proposition 106 sought to limit legal fees and was characterized as an anti-legal profession issue. Proposition 100 was supported by various trial lawyers and Proposition 101 possessed a heterogeneous base of support (Porter, 1988, p.3.) The involvement of so many divergent target audiences contributed to communications expenditures that rank among the nation's most expensive political media campaigns. Estimates of expenditures by all parties have exceeded 40 million dollars (Carson, 1988).

The victory of Proposition 103 was critical for the

insurance industry to analyzed because many experts viewed it as a consumer revolt, analogous to the tax revolt than spawned Proposition 13.

Research Objectives

As indicated earlier, the purpose of the study was to assess post hoc voter reaction to insurance commercials, spokespersons, and issues prominent in California. This situation provided a field environment for testing the power of continuous audience research technology, particularly when combined with survey methods, as a form of social science methodology.

Investigators were provided industry commercials, televised public forum debates, and news footage that appeared on television in California during the months prior to the election. Vignettes from this footage was used to create the stimulus tape. In addition to representing issues inherent in the California elections, the vignettes selected represented specific elements of the conceptual framework that had been developed from the national survey (Long and Vasu, 1988).

The conceptual framework resulted from a series of statistical relationships reflected in conceptual models that were used for analyzing national polling data. Aspects of the conceptual framework that were relevant for the California investigation were:

1. The average consumer/voter had high trust and confidence in his/her individual insurance agent

that compared favorably to levels of trust with other professionals (e.g. physicians and lawyers) and exceeded that level of trust and confidence associated with other occupations (e.g. newscasters, labor union leaders).

2. The average consumer/voter had significant distrust of the Insurance Industry itself.
3. Upper-income, white males had the most cynical attitudes toward the insurance industry. High-income females, a smaller portion of the high income group, followed a similar pattern.
4. There were distinct geographic effects, e.g., negative attitudes were related to urban areas (in this case, industry officials cite, urban areas are more costly business areas in contrast to non-urban areas; consequently urban consumers perceived the existence of and often paid higher premiums than their non-urban counterparts).
5. Consumers possess an entirely unrealistic perception of profit in the insurance industry (and other professions). Perceptions were measured in terms of percent per dollar profit.

These data suggested, to the investigators and IIAA representatives, a strong need to distinguish between affective (feelings and attitudes) and cognitive (thinking and empirical dimensions) aspects of consumer response to the various stimuli (Zanjonc, 1980; Keller and Staelin, 1987).

Research Design

The subjects (N=60) were California residents of voting age, chosen according to specific demographic criteria that was designed to achieve a representative socio-economic mix of voters from the Los Angeles and Walnut Creek areas of California. The subjects were placed in four focus groups of 15 persons.

The focus group phase of the investigation occurred during the first week of January, 1989, approximately two months after the California elections. Subject responses to the television segments were measured with one of the most advanced continuous attitudinal response technology systems available, SpeedBack(sm).

All four sessions were conducted in focus group facilities (located in Los Angeles and Walnut Creek). IIAA representatives and members of the research staff were in a room adjacent to the group's room. The researchers observed and video-taped each session through a one-way mirror. The researchers' observation room contained CART system equipment: Microcomputer, VCR's, monitors, cameras, and printer.

Subjects had a hand held device (a small microcomputer) with a keyboard and a dial. The keyboard was used to obtain subject responses to survey questions. The dial allowed subjects to react to the televised stimulus segments.

The dial used a scale that ranged from (1) one to one

hundred (100). Fifty (50) was operationalization of the neutral position or midpoint. Subjects were instructed to return to "neutral" between stimuli segments.

Responses recorded by each subject's hand-held computer were transmitted (via hardwire) to Speedback's(sm) main computer. The main computer, using customized applications software, captured and analyzed responses. These response analyses were used to create overlays containing curves and digital data reflecting demographic/psychographic descriptive statistics cross-referenced with responses for various groupings. This information was immediately superimposed on the video tape and played back to the focus group. Then, group was asked to retrospectively explain why they responded as they did.

The focus groups viewed a series of television vignettes that contained insurance related segments. These segments ranged from 30 seconds to approximately one minute in length. They were edited to reflect two continuous streams.

The first stream included a McDonald's Corporation commercial featuring "Ronald McDonald" (which in the vernacular of the advertising industry, is a "warm fuzzy"). The McDonald's commercial (which had been tested with Speedback(sm) in various regional markets throughout the U.S) had a known baseline. The general audience responses to this segment had always been very positive. A Rice Krispies commercial was the second segment in the first continuous stream. This commercial had also been tested in various

regional markets, usually generating a rather negative reaction among parents because of violent segments and a characterization of the father that made him appear to be a buffoon. The third, and final, segment on the first stream was a standard industry commercial featuring Raymond Burr, IIAA's spokesman and well-known and respected actor.

The second continuous stream featured six (6) segments ranging from 30 seconds to a minute in length, featuring spokespersons for and against the various Propositions. These segments were chosen to highlight the various actors and issues inherent in the policy dispute surrounding Proposition 103. These issues included, redlining, excessive insurance industry profits, insurance motivations for rate hikes (bad investments in Latin America), and segments that gave the industry's view point (cost of doing business in California).

These segments were chosen because they contained concepts that national polling had identified as significant issues among voters and consumers. (Thus, the focus group research design was driven by the national polling data.) Segments included: Mr. Graffind Attorney at Law, identified as such on the video tape, reflecting the legal professions position (2 segments); Mr. Miller an insurance broker, identified as such on tape, reflecting the insurance industry position (2 segments); news clips containing a consumer advocate, scenes that depicted the automobile insurance rate situation in California, and an insurance industry spokesman

claiming the industry was losing money in the auto insurance market in the state (2 segments).

The second contiguous stream was played to the audience twice in succession. On the first pass subjects were asked to rate the televised stimulus as "favorable or unfavorable" or "believable or unbelievable". The order of response options were reversed each time to avoid response set bias. Investigators did not identify any association with the client.

Prior to recording responses to the stimulus, a training and "warm up" session was provided to acquaint subjects with use of the held device and the procedure. The entire focus group session was videotaped by a professional television production crew.

Finally, a series of concept questions were administered to the Northern California group only (N=30) to test the salience of various topics for inclusion in the 1990 national insurance industry poll. These issues focused on: Younger drivers being charged higher rates because they were greater risks, insurance industry profits, legal fees being the cause of high insurance rates, and a bad driving record being the basis for higher rates. These concepts emerged as a results of the L.A group debriefing sessions.

Data Analysis

Data analysis was based on viewing the continuous information (curve amplitudes) on the tape, statistical analysis of the demographic and psychographic breakdowns in

the margins of video, and qualitative analysis of the debriefing. Content analytic procedures, based on the conceptual model, were used for the qualitative analysis.

The McDonald's and Rice Krispies commercials were used as bench-marks or as a rough form of control, since they had been tested with SpeedBack(sm) several groups throughout the United States. They provided a quantitative baseline and a concrete (numerical) basis for probes.

Immediate feedback derived from the video replay of moving curves and quantitative output allowed researchers to precisely pinpoint "up swings" and "down swings" in audience reaction. This information becomes more concrete and "real" as the audience watched the playback and responded, indicating why they were favorable or unfavorable to that segment. Also, taping the entire process increased reliability by allowing others to evaluate audience reactions and discourse.

Since the focus groups did not represent a probability sample, inferential statistics or tests of statistical significance between subgroups were of questionable value. Thus, the area under the curve, i.e., simple amplitude, was used to assess aggregate response patterns.

When subgroup differences were extreme, the differences were used to direct and focus discussion during the debriefing sessions. This process was facilitated through use of a wireless communications device. The moderator and researchers behind the one-way mirror were able to interact,

i.e., the device that allowed the moderator to receive questions and comments from control booth researchers, who were viewing output, through an unobtrusive earphone. These questions were generated by insurance industry representatives and the researchers. Persons in the control room were able to viewing the printouts and the overlay video. In addition, they could identify each group member by psychographic and demographic characteristics. Thus, the moderator was also asked to direct questioning to specific individuals and subgroups, a procedure typically not available in traditional focus group research.

Respondents were shown their own responses and asked to comment on them. For example, at one point the attorney Mr. Graffind made the allegation that the reason for the high cost of auto insurance in California was that insurance companies had engaged in collusion to raise rates and regain extensive losses form bad investments in Latin America. The audience showed a strong "affective" response to what the attorney was saying by dialing up (i.e., strongly favorable and believable) when this statement was made. During the debriefing, a series of questions were generated to compare the "believability" this statement with subject insurance companies in general.

Results

Several data comparisons were presented to IIAA; a

portion of those were developed for this monograph. These included the following:

1. Aggregate Results. Subjects reactions, independent of geographical location and individual differences. (n=60; i.e., all four groups collapsed into a single group).
2. Geographic Differences. Subject groups were combined by geographic location (Los Angeles versus Walnut Creek groups). Then, between group comparisons were made ($n_{groupLA}=30$; $n_{groupWC}=30$).
3. Demographic/psychographic Differences.

All comparative approaches, aggregate and geographic, were used to assess the Raymond Burr commercial and edited television segments (both continuous streams).

The researchers spent approximately 80 hours reviewing videotaped accounts of all four sessions in order to complete the qualitative analysis and compare group responses with national statistical models (Long & Vasu, 1988).

Results reported here included: (1) Graphic displays of continuous audience responses to selected video segments, subdivided by income, geography (LA versus Walnut Creek), and affective versus cognitive responses.

Aggregate Response - Raymond Burr Commercial. Figure 2 contained the subjects' (n=60) responses to the two warm-up and the one Raymond Burr commercial. Audience response, in this case, was operationalized as ranging from very unfavorable (1) to very favorable (100). No differences in

response patterns existed when Los Angeles and Walnut Creek groups were compared.

Figure 2 about Here.

Qualitative and quantitative analyses led to the inescapable conclusion that Raymond Burr evoked a general, favorable response from the aggregate group. The curve plot indicated that the IIAA Burr commercial generated immediate favorable responses, moving to the 55 to 60 range. In addition, it was important to note that the commercial remained at that level, without any relative decline.

This overall rating was not as high as the McDonald commercial exhibited, reaching a high point response between 60 and 65 toward the end. However, the IIAA Burr commercial was dealing with insurance needs, not hamburgers and happy children. It also evoked a somber theme, e.g., protection against the adversities of a hostile world. In addition, subjects had just been inundated (approximately 2 months prior to the investigation) by one of the nation's most extensive media campaigns, which focused on insurance issues. In addition, the media coverage contained a significant amount of "anti-insurance" content. In light of these factors, the IIAA commercial and spokesperson was responded to very favorably, particularly when compared to McDonald's and Rice Krispies commercials. Thus, researchers concluded that the omission of Raymond Burr in the Proposition 103

media campaigns was probably a major tactical error on the part of the insurance industry. (Raymond Burr, IIAA's spokesperson, was not employed directly to represent the industry's position during the period of time prior to the actual vote on the propositions).

"Affective" responses were primary for the audience when exposed to the Burr commercial. This observation was consistent with social psychological and consumer research (Zajonc, 1980; Johnson and Tversky, 1983). Responses to probes showed that Raymond Burr's "image", rather than the "information" he conveyed, had evoked positive responses. The debriefing confirmed conclusion with several subjects claiming to have heard very little of the content of Burr's narrative. Others indicated they were responding to the positive image they had of "Perry Mason" (the television role play played by Burr in a series and, most recently, in made for television motion pictures). This image was reflected in Burr's vocal intonation patterns, authoritative persona, and high level of source credibility. Subject responses were analogous to discussions in "The Selling of the President". This observation underscored the importance of modern campaign techniques that emphasize "image" and the impact of image on voter behavior."

One additional finding was a poor recognition of the IIAA Logo which was a "trailer" in the Burr commercial. Subjects indicated the IIAA logo was "confusing" because it looked like U.S. Post Office's logo. Few said it had any

identifiable or memorable features; most said they did not associate it with the IIAA.

Demographic Differences - Raymond Burr Commercial.

Figure 3 compared responses by income categories (n=60). This graph represented reactions to the same commercials described previously. The straight line reflected those making less than $36,000 per year. The line formed by pluses

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Figure 3 About Here

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represented those making greater than $36,000. A clear income effect was evident. This pronounced effect indicated that higher income persons were being less favorable toward the Burr commercial. As indicated earlier, data analyses with the national opinion poll (Long & Vasu, 1988) shown a clear income effect when controlling for income on a variety of attitudes toward insurance policy issues. Although the exact interpretation of these data must be made in light of a small sample in the CART investigation, it was important to note that the hypothesis generated in the traditional survey research endeavor was be replicated with a small sample of California voters. An implication of this was to consider testing the interaction between income and a tendency to respond affectively to a commercials .

There were important, practical implications for insurance industry communication programs when it was found

that this small sample of voters reflected trends in linear models developed from an earlier, large national sampling project. For example, it was hypothesized that the relationship between income and insurance purchasing behavior will be influenced by any commercials that appeal differentially to upper income groups.

Aggregate Responses - Television Segments. As stated previously, the purpose of the study was to assess the attitudes of demographically heterogeneous groups of California residents toward insurance issues surrounding Proposition 103. Analyses of statistical subgroups (men women, liberals, moderates, conservatives, etc.) in aggregate form (n=60) across all six stimuli provided the following general conclusions:

1. Subjects were skeptical of insurance industry message. This was evident in statistical and visual data and supported by subjects' comments during the debriefing session. Moreover, the success of Proposition 103 was testimony to this contention.
2. A review of the tapes and statistical data clearly indicated that the average focus group member was more likely to respond favorably to information if it was presented under the label of consumer advocate (which it was in one segment).
3. Subjects were also more favorable to information presented by representatives of the legal profession, as in the case of Mr. Graffind.

4. Subjects were most skeptical of any information attributed to an insurance industry spokesman, independent of content. The finding was consistent across all issues and represented in each of the six vignettes. For example, there was a general rejection of the idea that high insurance rates resulted from the costs of doing business in certain areas of California. There was clear and profound rejection of the contention that the insurance industry was losing some proportion of every dollar on every automobile policy that they written in California and prediction that the situation would get worse. In fact, this exact contention communicated by an insurance industry spokesman was met with a "nosedive response" among most respondents.
5. Subjects responded favorably to two specific segments taken from the news broadcasts one, the plight of the San Francisco M.D. who paid "the highest rates in the country one block from here with a perfect driving record", and the consumer who appeared on tape indicating that he might have to "eat the cost of the accident" rather than report it because of the effect on his premiums.

The debriefing was effective in making one point: Across all groups there was skepticism about the industry's position and a tendency to believe all manner of explanations

for increased insurance rates other than the cost of doing business. In this context, there was marked aggregate support for untested and questionable contentions (such as the one made by Mr. Graffind, at one point) such as: Insurance rates were high in California due to the fact that the insurance industry had lost money in "bad investments" in Latin America. Many subjects eagerly accepted this assertion.

In general, CART aided in defining a credibility gap that is substantial and biased against information about insurance presented by insurance industry sources. Overall, it was concluded that the industry's communication strategy would have to deal with the negative frame of reference that had developed among California voters toward messages produced by insurance organizations.

Geographic Differences: North vs. South. National data (Long & Vasu, 1988) had suggested geographic effects: Insurance-related policy matters would be perceived differently in LA (n=30), one of the nation's highest centers for auto insurance premiums, compared to an area like Walnut Creek (n=30), a suburb in the San Francisco Bay area.

Figure 4 illustrated the reactions to one segment that included Lawrence Graffind, Attorney at law, making a series of statements advocating an initiative which was supported by trial lawyers. These statements contained comments points about the insurance industry.

Figure 4 About Here

(The curve in Figure 4 reflects the results of asking the groups to dial twice for the same stimulus tape, one response based on very believable/very unbelievable and very favorable/very unfavorable; cognitive and affective reactions, respectively. Note: Order of response options were reversed in each location to reduce bias.)

Geographic subgrouping permitted analysis of "north" (Walnut Creek) and "south" (Los Angeles) effects. Comparisons reveals a clear geographic effect. The Los Angeles curve indicates a more favorable reaction to Lawrence Graffind's anti-insurance industry message. There was also greater variance in affective versus cognitive reactions for the southern group. It was clear that the LA focus groups believed the anti-industry message and had a negative feelings toward the industry. The Walnut Creek group was more neutral toward Graffind's message and, consequently, had a less intense attitudinal position, i.e., less anti-insurance industry oriented. In addition, cognitive and affective reactions were more similar, i.e., less variance.

Additional findings resulted when investigators were reviewing videotapes for Northern and Southern comparisons. Subjects were able and did make distinctions between what they "believed" and how they "felt" toward the televised messages. In addition, Walnut Creek groups tended to

perceive the insurance problem as one caused by the "LA" situation and negative "feelings" about the LA area were expressed. Finally, the concept of "redlining" or using geography as a criteria for setting rates, was accepted as a fact of life by most people in the Walnut Creek Group. The LA group, which was most effected by redlining, was almost uniformly opposed to rates based on geography. In fact, the word "relining" became a frequently used anti-insurance symbol used by opponents of the insurance industry. It was interesting to note that Proposition 103 failed to get a majority vote in most California Counties. Proposition 103, however, passed in Los Angeles by a wide margin.

Figure 5 indicated that the Los Angeles group believed the messages from the consumerist more than the Walnut Creek group, even though their affective responses were very similar.

Figure 5 About Here

The debriefing illustrated some interesting elements of a "calculus of consent" used by the members of the group. Some people clearly stated that the debate over the various propositions was so extensive and confusing that they were faced with information overload. Some said they had voted for Prop 103 because it was the "voter revolt" or "consumer" initiative supported by Ralph Nader. This cue-taking suggested that the voters reduced the complexity of the

California Insurance Initiatives debate to a simplistic notion of voting for or against lawyers, the insurance industry, or consumer advocates.

CONCLUSION

The purpose of this monograph was to present a rationale for combining CART systems with survey methods, describe Speedback(sm) (a continuous audience response technology system), and discuss an application of combined CART and survey methods. This section was reserved for summative, concluding observations about the efficacy CART systems combined with survey methods.

The fact that many conceptual elements generated from large-scale survey research (the national poll) were confirmed was an important support for combined methods, especially for the use of CART to test models developed in large sample, research projects. In addition, the videotaped audience reactions provided a permanent record of qualitative observations which were made available to others as a form of a reliability check.

SpeedBack(sm) was used to test the salience of certain questions and concepts that will be included in a subsequent national poll (1990). Question & concept testing (in terms of format and content) and the ability to probe prior to large scale research is a much more powerful pilot test for survey methods than approaches traditionally used, i.e, current methods are usually restricted to field testing

questions without probes. In combined methods, concept salience can be explored in far greater depth.

Combined methods, then, resulted in a form of model building that bridged inductive and deductive processes inherent in research. In effect, combined methods provided a feedback loop (see Figure 1): The IIAA national poll was used to drive the SpeedBack(sm) focus group research design and variables and SpeedBack(sm) was used to refine the National Poll.

Finally , the ability to observe moving histograms, response curves, and levels of significance between demographic/psychographic subgroups in real time provided a basis for hypothesizing and testing relationships. For example, observing that women and men are responding to an issue (presented in videotaped format) very different ways, permits researchers the opportunity to ask subjects "why" these different reactions occurred is a singular strength of CART systems.

One problem inherent in traditional focus group research is the tendency for the most vocal subjects to dominate the session. SpeedBack(sm) and some of the other CART systems overcome this problem by providing subjects with personal, hand-held response computers, dials, or buttons. This technology allows each subject to make "private" responses, without being unduly influenced by other group members. The customized software used with SpeedBack(sm) has the capacity to identify response patterns of individual

subjects. This feature is used by researchers to insure that all points of view are expressed during the debriefing session.

Subjects are asked for their reactions to the session and use of SpeedBack(sm) after testing is completed. General audience response has been very positive. One interesting comment, made by one member of the Los Angeles group, was that the technology itself it difficult for one to be passive about the stimulus, since attention is required in order to respond.

Continuous audience response technologies, while more prominent in consumer testing, advertising, motion picture, and political campaign consulting, have a number of applications in basic social science research that have not been addressed in this piece. Moreover, like any new research method, they must be applied, described in research literature, criticized, and refined before they become a standard part of researchers' tool kits.

REFERENCES

Babbie, Earl. 1989. The Practice of Social Research. Belmont, California: Wadsworth.

Bailey, Kenneth D. 1989. Methods of Social Research (3rd ed.) New York: The Free Press.

Bradburn, Norman and Seymour Sudman. 1988. Polls and Surveys. San Francisco, Ca: Jossey Bass.

Carson, Daniel C. 1988. Insurer Plan of "Economic Terrorism Charges by Prop. 103 Sponsors. The San Diego Union. Dec 28, 1988.

Converse, Philip and Michael W. Traugott. 1986. Assessing the Accuracy of Polls and Surveys. Science. 234: 1094-1098.

Cook, Thomas D. and Donald T. Campbell. 1979. Quasi-Experimentation: Design and Analysis Issue for Field Studies. Boston: Houghton Mifflin.

Hughes, G. David. In press. Diagnosing communications problems with continuous measures of subjects' responses: applications, potential applications, and future research. Current Issues and Research in Advertising.

Hurwitz, Jon and Mark Peffley. 1987. How are Foreign Policy Attitudes Structured? American Political Science Review. 81: 1099-1120.

Johnson, Eric and Amos Tversky. 1983. Affect, Generalization and Perception of Risk. Journal of Personality and Social Psychology. 45: 20-31.

Keller, Kevin and Richard Staelin. 1987. Effects of Quality and Quantity of Information on Decision Effectiveness. Journal of Consumer Research. 14: 200-213.

Keppel Geoffrey. 1982. Design and Analysis: A Researcher's Handbook 2nd ed. Engelwood Cliffs, New Jersey: Prentice-Hall, Inc.

Kerlinger, Fred N. 1973. Foundations of Behavioral Research 2nd ed. New York: Holt, Rinehart and Winston, Inc.

Krueger, Richard A. 1988. Focus Groups: A Practical Guide for Applied Research. Beverly Hills, California: Sage.

Long, Larry and Michael L. Vasu. 1988. Public Issues in 1988. New York: Independent Insurance Agents of America.

Nunnally, Jim C. 1978. Psychometric Theory. New York: McGraw-Hill.

Porter Linda. 1988. Ican Gets Best Rating from Independent Actuaries. San Diego Trial Bar News. 11: 3-4.

Rossi, Peter, Wright James D., and Andy Anderson. 1983. Handbook of Survey Research. San Diego, California: Harcourt, Brace, Jovanovich.

Sudman, Seymour and Norman M. Bradburn. 1982. Asking Questions. San Francisco, California: Jossey-Bass.

Vasu, Michael L. 1979. Politics and Planning: A National Study of American Planners. Chapel Hill, NC: The University of North Carolina Press.

Wirth, Clifford and Michael L Vasu. 1987. Ideology and Decision-Making for American City Managers. Urban Affairs Quarterly. 22: 454-474.

Zajonc, R. B. 1980. Feeling and Thinking: Preferences Need No Inferences. American Psychologist. 35: 151-175.

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FIGURE 2.

WARMUP SPOTS

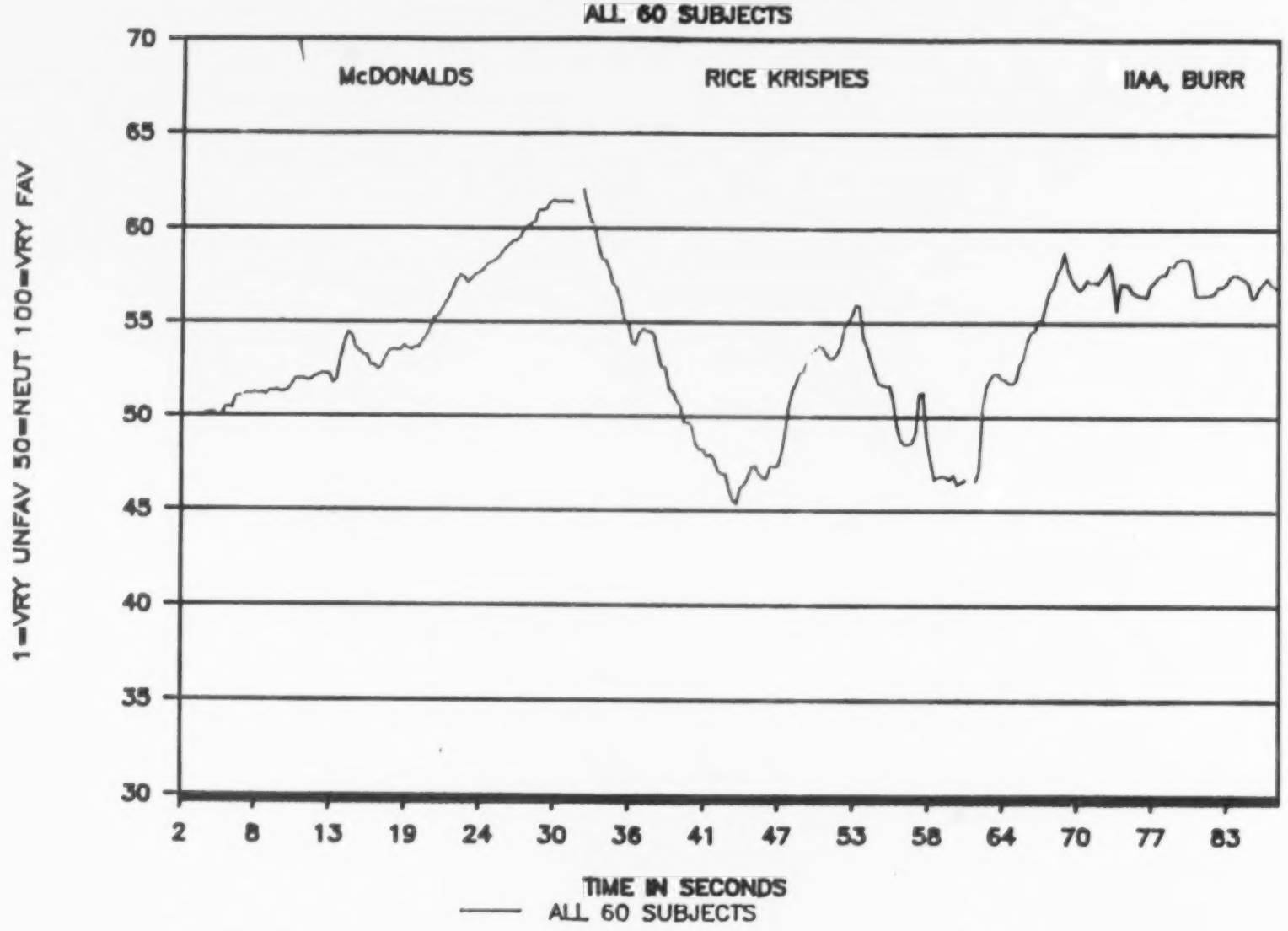


FIGURE 3.
WARMUP SPOTS
BY INCOME

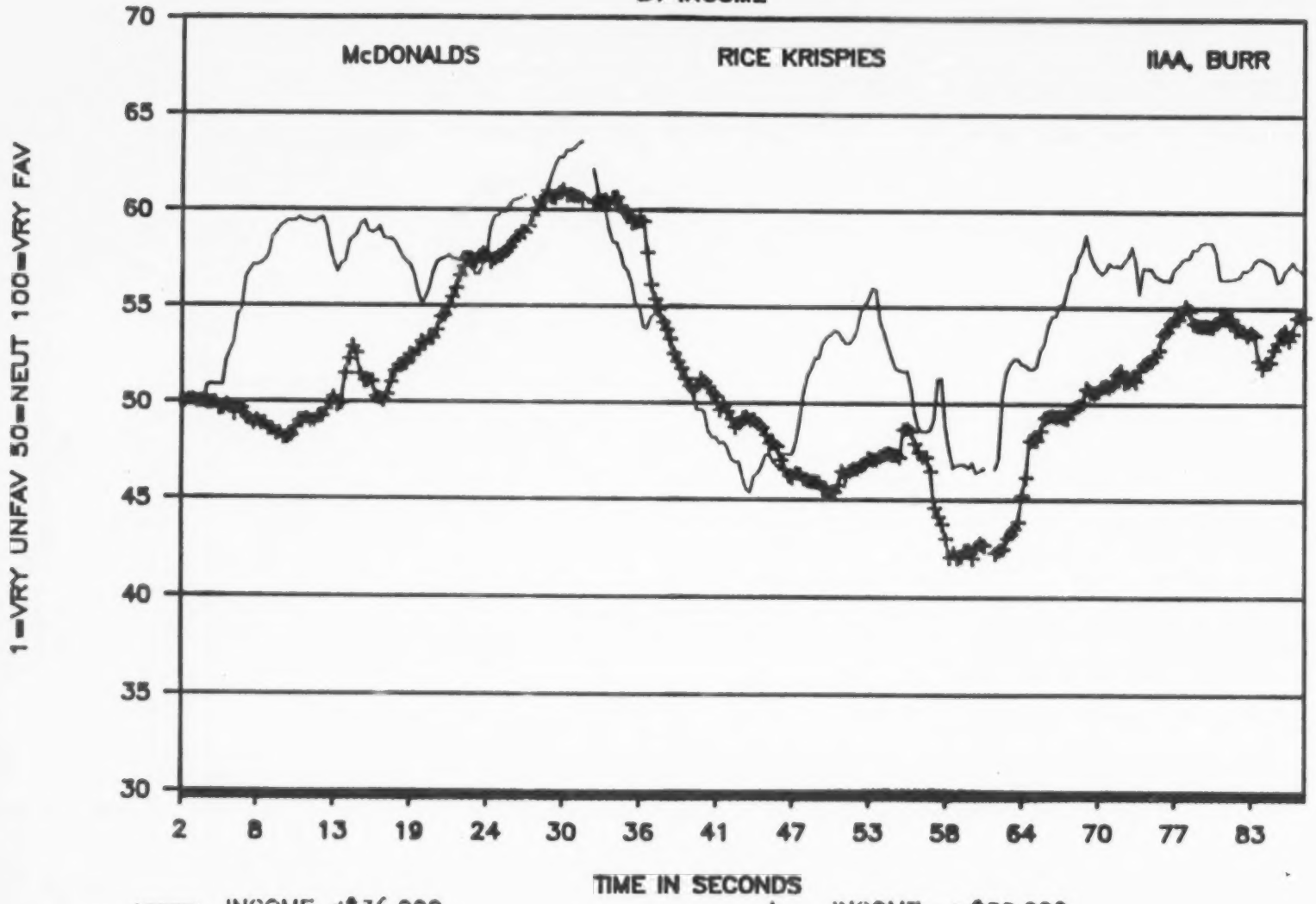


FIGURE 4.

GEOGRAPHIC EFFECTS

LAWRENCE GRAFFIND, ATTNY

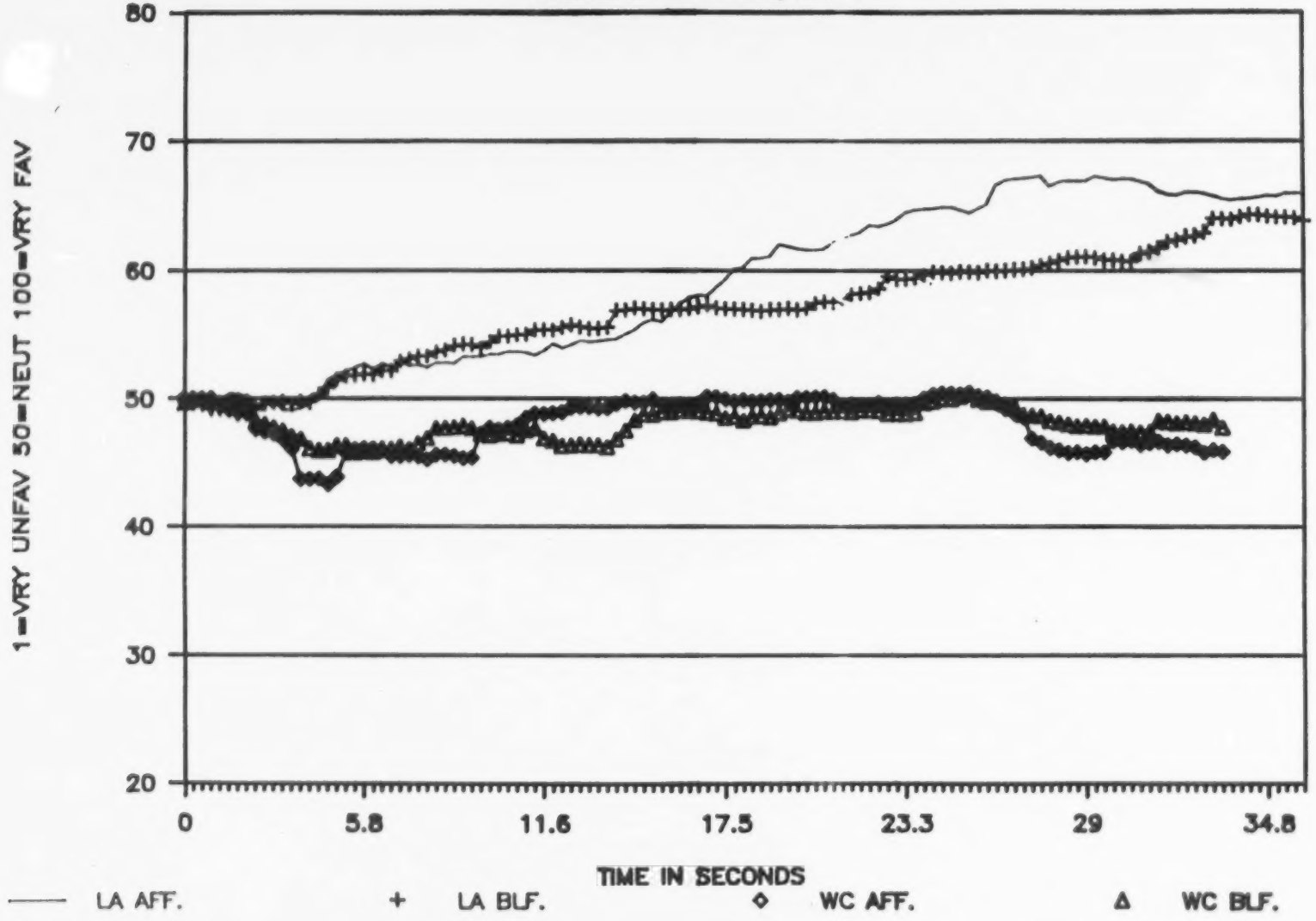
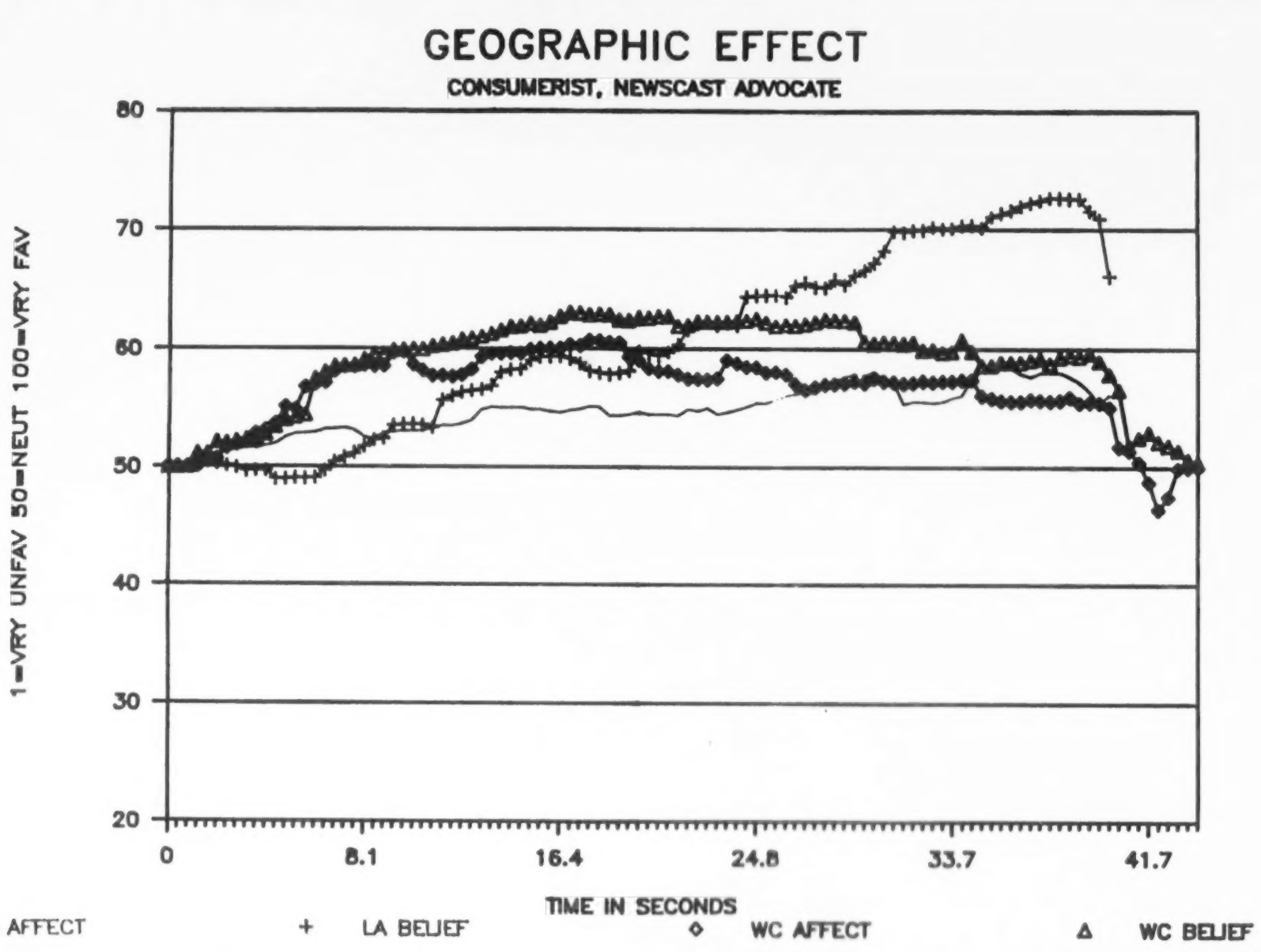


FIGURE 5.


GEOGRAPHIC EFFECT
CONSUMERIST, NEWSCAST ADVOCATE
1=VRY UNFAV 50=NEUT 100=VRY FAV
80
70
60
50
40
30
20
0
8.1
16.4
24.8
33.7
41.7
TIME IN SECONDS
AFFECT
+ LA BELIEF
◇ WC AFFECT
Δ WC BELIEF